

WHAT IS CLAIMED IS:

1           1.       An electrode-rolled battery in which an anode and a  
2 cathode are rolled in a manner that a separator is put between  
3 said anode and said cathode and in which a plurality of collecting  
4 tabs is respectively provided with a plurality of anode active  
5 material unformed parts of said anode and a plurality of cathode  
6 active material forming parts of said cathode; and

7           wherein when a length of an outermost anode active material  
8 unformed part is set as "L"; and when a distance from said outermost  
9 anode active material unformed part to a center of a rolled body  
10 made up of said anode, said cathode and said separator, is set  
11 as "R", a following expression is set:

12           
$$L \geq 2\pi R.$$

1           2.       The electrode-rolled battery according to Claim 1,  
2 wherein each of said collecting tabs is arranged regularly on an  
3 end face of said rolled body.

1           3.       An electrode-rolled battery in which an anode and a  
2 cathode are rolled in a manner that a separator is put between  
3 said anode and said cathode and in which a plurality of collecting  
4 tabs is respectively provided with a plurality of anode active  
5 material unformed parts and a plurality of cathode active material  
6 forming parts; and

7           wherein when a length of an outermost anode active material  
8 unformed part is set as "L"; and when a distance from said outermost  
9 anode active material unformed part to a center of a rolled body  
10 made up of said anode, said cathode and said separator, is set  
11 as "R", when a deviation between a start point of said outermost

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12 anode active material unformed part and a start point of a  
 13 outermost cathode active material forming part which is opposite  
 14 to said outermost anode active material unformed part is set as  
 15 " $\alpha$ ", and when a deviation between an end point of said outermost  
 16 anode active material unformed part and an end point of said  
 17 outermost cathode active material forming part which is opposite  
 18 to said outermost anode active material unformed part is set as  
 19 " $\beta$ ", a following expression is set:

20 
$$L = 2\pi R + \alpha + \beta.$$

1 4. The electrode-rolled battery according to Claim 3,  
 2 wherein each of said collecting tabs is arranged regularly on an  
 3 end face of said rolled body.

1 5. An electrode-rolled battery comprising:  
 2 an anode having a first band-shaped electrode and  
 3 intermittently having anode active material forming parts on both  
 4 sides of said first band-shaped electrode in a longitudinal  
 5 direction;

6 a cathode having a second band-shaped electrode and  
 7 intermittently having cathode active material forming parts on  
 8 both sides of said first band-shaped electrode in a longitudinal  
 9 direction;

10 a plurality of first collecting tabs formed in said anode  
 11 active material forming parts of said first band-shaped  
 12 electrode;

13 a plurality of second collecting tabs formed in said cathode  
 14 active material unformed parts of said second band-shaped  
 15 electrode; and

16 a separator put between said cathode and said anode;

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17        said electrode-rolled battery in which said anode, said  
18 cathode and said separator are rolled; and

19        wherein when a length of an outermost anode active material  
20 unformed part is set as "L"; and when a distance from said outermost  
21 anode active material unformed part to a center of a rolled body  
22 made up of said anode, said cathode and said separator, is set  
23 as "R", when a deviation between a start point of said outermost  
24 anode active material unformed part and a start point of a  
25 outermost cathode active material forming part which is opposite  
26 to said outermost anode active material unformed part is set as  
27 " $\alpha$ ", and when a deviation between an end point of said outermost  
28 anode active material unformed part and an end point of said  
29 outermost cathode active material forming part which is opposite  
30 to said outermost anode active material unformed part is set as  
31 " $\beta$ ", a following expression is set:

32        
$$L \geq 2 \pi R.$$

1        6.        The electrode-rolled battery according to Claim 5,  
2 wherein each of said collecting tabs is arranged regularly on an  
3 end face of said rolled body.

1        7.        An electrode-rolled battery comprising:  
2        an anode having a first band-shaped electrode and  
3 intermittently having anode active material forming parts on both  
4 sides of said first band-shaped electrode in a longitudinal  
5 direction;  
6        a cathode having a second band-shaped electrode and  
7 intermittently having cathode active material forming parts on  
8 both sides of said second band-shaped electrode in a longitudinal  
9 direction;

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5 with a plurality of cathode active material unformed parts and  
 6 a plurality of anode active material forming parts; and  
 7 wherein when a length of an outermost anode active material  
 8 unformed part is set as "L"; and when a distance from said outermost  
 9 anode active material unformed part to a center of a rolled body  
 10 made up of said anode, said cathode and said separator, is set  
 11 as "R", a following expression is set:

12 
$$L \geq 2\pi R.$$

1 10. The method according to Claim 9, wherein each of said  
 2 collecting tabs is arranged regularly on an end face of said rolled  
 3 body.

1 11. A method of manufacturing an electrode-rolled  
 2 battery in which an anode and a cathode are rolled in a manner  
 3 that a separator is put between said anode and said cathode and  
 4 in which a plurality of collecting tabs is respectively provided  
 5 with a plurality of anode active material unformed parts and a  
 6 plurality of cathode active material forming parts; and  
 7 wherein when a length of an outermost anode active material  
 8 unformed part is set as "L"; and when a distance from said outermost  
 9 anode active material unformed part to a center of a rolled body  
 10 made up of said anode, said cathode and said separator, is set  
 11 as "R", when a deviation between a start point of said outermost  
 12 anode active material unformed part and a start point of a  
 13 outermost cathode active material forming part which is opposite  
 14 to said outermost anode active material unformed part is set as  
 15 " $\alpha$ ", and when a deviation between an end point of said outermost  
 16 anode active material unformed part and an end point of said  
 17 outermost cathode active material forming part which is opposite

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18 to said outermost anode active material unformed part is set as  
19 " $\beta$ ", a following expression is set:

20 
$$L = 2\pi R + \alpha + \beta.$$

1 12. The method according to Claim 11, wherein each of said  
2 collecting tabs is arranged regularly on an end face of said rolled  
3 body.

1 13. A method of manufacturing an electrode-rolled  
2 battery comprising:

3 an anode forming process of forming an anode by  
4 intermittently forming anode active material forming parts on  
5 both sides of a first band-shaped electrode in a longitudinal  
6 direction;

7 a cathode forming process of forming a cathode by  
8 intermittently forming cathode active material forming parts on  
9 both sides of a second band-shaped electrode in a longitudinal  
10 direction;

11 a connecting process of connecting a plurality of first  
12 collecting tabs to anode active material unformed parts of said  
13 first band-shaped electrode and of connecting a plurality of  
14 second collecting tabs to cathode active material unformed parts  
15 of said second band-shaped electrode;

16 a rolling process of rolling said cathode and said anode,  
17 and a separator which is put between said cathode and said anode;

18 a first tab gathering process of gathering each of said first  
19 collecting tabs;

20 a header connecting process of connecting a collecting  
21 header to said first collecting tabs which are gathered;

22 a second tab gathering process of gathering each of said

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23 second collecting tabs;

24 an electrolyte injecting process of injecting electrolyte  
25 into said rolled body using an electrolyte injecting apparatus:

26 wherein when a length of an outermost anode active material  
27 unformed part is set as "L"; and when a distance from said outermost  
28 anode active material unformed part to a center of a rolled body  
29 made up of said anode, said cathode and said separator, is set  
30 as "R", a following expression is set:

31 
$$L \geq 2\pi R.$$

1 14. The method according to Claim 13, wherein each of said  
2 collecting tabs is arranged regularly on an end face of said rolled  
3 body.

1 15. A method of manufacturing an electrode-rolled  
2 battery comprising:

3 an anode forming process of forming an anode by  
4 intermittently forming anode active material forming parts on  
5 both sides of a first band-shaped electrode in a longitudinal  
6 direction;

7 a cathode forming process of forming a cathode by  
8 intermittently forming cathode active material forming parts on  
9 both sides of a second band-shaped electrode in a longitudinal  
10 direction;

11 a connecting process of connecting a plurality of first  
12 collecting tabs to anode active material unformed parts of said  
13 first band-shaped electrode and of connecting a plurality of  
14 second collecting tabs to cathode active material unformed parts  
15 of said second band-shaped electrode;

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16 a rolling process of rolling said cathode and said anode,  
17 and a separator which is put between said cathode and said anode;  
18 a first tab gathering process of gathering each of said first  
19 collecting tabs;  
20 a header connecting process of connecting a collecting  
21 header to said first collecting tabs which are gathered;  
22 a second tab gathering process of gathering each of said  
23 second collecting tabs;  
24 an electrolyte injecting process of injecting electrolyte  
25 into said rolled body using an electrolyte injecting apparatus:  
26 wherein when a length of an outermost anode active material  
27 unformed part is set as "L"; and when a distance from said outermost  
28 anode active material unformed part to a center of a rolled body  
29 made up of said anode, said cathode and said separator, is set  
30 as "R", when a deviation between a start point of said outermost  
31 anode active material unformed part and a start point of a  
32 outermost cathode active material forming part which is opposite  
33 to said outermost anode active material unformed part is set as  
34 " $\alpha$ ", and when a deviation between an end point of said outermost  
35 anode active material unformed part and an end point of said  
36 outermost cathode active material forming part which is opposite  
37 to said outermost anode active material unformed part is set as  
38 " $\beta$ ", a following expression is set:  
39 
$$L = 2\pi R + \alpha + \beta.$$

1 16. The method according to Claim 15, wherein each of said  
2 collecting tabs is arranged regularly on an end face of said rolled  
3 body.

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